

WHAT IS CLAIMED IS:

1. An electromagnetic wave detector comprising:  
conversion elements for converting incident  
electromagnetic waves or radiations into an electric  
charge;

storage capacitors for storing the electric charge  
produced by said conversion elements;

thin film read transistors connected respectively  
to the corresponding storage capacitors and each having  
a gate to which ON and OFF voltages are applied  
respectively in readout and storage periods; and

thin film reset transistors connected respectively  
to the corresponding storage capacitors and each having  
a gate to which ON and OFF voltages are applied  
respectively in reset and storage periods,

the OFF voltage applied to the gates of said thin  
film reset transistors being set to a value closer to  
the ON voltage applied to the gates of the thin film  
reset transistors than the OFF voltage applied to the  
gates of said thin film read transistor.

2. An electromagnetic wave detector according to  
claim 1, wherein said conversion elements are adapted  
to absorb electromagnetic waves showing an energy level  
higher than visible light and convert them into an  
electric charge.

3. An electromagnetic wave detector according to claim 1, wherein said thin film read transistors and said thin film reset transistors have a non-monocrystalline semiconductor layer formed on an insulating substrate.

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4. An electromagnetic wave detector according to claim 1, wherein

said thin film read transistors and said thin film reset transistors are formed on an insulating substrate; and

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said conversion elements are formed on a substrate different from said insulating substrate and electrically connected to said thin film read transistors and said thin film reset transistors.

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5. An electromagnetic wave detector according to claim 1, wherein

said conversion elements comprises a semiconductor substrate having two opposite surfaces for converting electromagnetic waves into an electric charge, a common electrode arranged on the one surface of the semiconductor substrate and a plurality of electrodes formed on the other surface of the semiconductor substrate and separated from each other in correspondence to a plurality of two-dimensional pixels;

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said thin film read transistors and said thin film reset transistors are formed on an insulating substrate such that unit cells each including one of the thin film read transistors and one of the thin film reset transistors are arranged on the insulating substrate in correspondence to the pixels; and

said semiconductor substrate and said insulating substrate form a layered structure and said plurality of electrodes and said unit cells are electrically connected between the substrates.

6. An electromagnetic wave detector according to claim 5, wherein said semiconductor substrate is provided in plurality as arranged two-dimensionally on said insulating substrate to form a layered structure and the common electrodes of the semiconductor substrates are mutually short-circuited.

7. An electromagnetic wave detector according to claim 5, wherein a high voltage is applied to the common electrode of said conversion elements and a shielding conductor is arranged near the common electrode.

8. An electromagnetic wave detector according to claim 1, wherein said thin film read transistors and said thin film reset transistors are formed on an

insulating substrate provided with a driver circuit for driving the thin film read transistors and the thin film reset transistors and with a read circuit for reading signals from said thin film read transistors.

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9. An electromagnetic wave detector comprising:  
conversion elements for converting incident  
electromagnetic waves or radiations into an electric  
charge;

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storage capacitors for storing the electric charge  
produced by said conversion elements; and

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thin film reset transistors connected respectively  
to the corresponding storage capacitors and each having  
a gate to which ON and OFF voltages are applied  
respectively in reset and storage periods,

any excessive electric charge being discharged by  
way of the thin film reset transistors in each storage  
period.

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10. An electromagnetic wave detector according to  
claim 9, wherein said conversion elements are adapted  
to absorb electromagnetic waves showing an energy level  
higher than visible light and convert them into an  
electric charge.

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11. An electromagnetic wave detector according to  
claim 9, wherein said thin film reset transistors have

a non-monocrystalline semiconductor layer formed on an insulating substrate.

5 12. An electromagnetic wave detector according to claim 9, wherein

thin film read transistors and said thin film reset transistors are formed on an insulating substrate; and

10 said conversion elements are formed on a substrate different from said insulating substrate and electrically connected to said thin film read transistors and said thin film reset transistors.

15 13. An electromagnetic wave detector according to claim 9, wherein

said conversion elements comprises a semiconductor substrate having two opposite surfaces for converting electromagnetic waves into an electric charge, a common electrode arranged on the one surface of the semiconductor substrate and a plurality of electrodes formed on the other surface of the semiconductor substrate and separated from each other in correspondence to a plurality of two-dimensional pixels;

25 thin film read transistors and said thin film reset transistors are formed on an insulating substrate such that unit cells each including one of the thin

film read transistors and one of the thin film reset transistors are arranged on the insulating substrate in correspondence to the pixels; and

5        said semiconductor substrate and said insulating substrate form a layered structure and said plurality of electrodes and said unit cells are electrically connected between the substrates.

10        14. An electromagnetic wave detector according to claim 13, wherein said semiconductor substrate is provided in plurality as arranged two-dimensionally on said insulating substrate to form a layered structure and the common electrodes of the semiconductor substrates are mutually short-circuited.

15        15. An electromagnetic wave detector according to claim 13, wherein a high voltage is applied to the common electrode of said conversion elements and a shielding conductor is arranged near the common  
20        electrode.

25        16. An electromagnetic wave detector according to claim 9, wherein thin film read transistors and said thin film reset transistors are formed on an insulating substrate provided with a driver circuit for driving the thin film read transistors and the thin film reset transistors and with a read circuit for reading signals from said thin film read transistors.